

MARKET RESEARCH & PLANNING FEASIBILITY STUDY

CONSERVATORY, GREENHOUSE AND BOTANICAL GARDEN
FACILITY FOR MUNICIPALITY OF METRO TORONTO

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Market Research - Planning Feasibility Study

Conservatory, Greenhouse and
Botanical Garden Facility
for Municipality of Metro
Toronto.

METROGREEN
Information Sheet

- ... Toronto is among the top five cities in North America as a tourist destination. It attracts about 21 million visitors a year, of which, over 90% come for pleasure, vacation & attractions.
- ... Toronto has many cultural attractions that qualify the city as a cultural centre, yet among the world's leading cultural cities, it is one of the few without a major public botanic/horticultural facility.
- ... Public pleasure gardens rate very high as attractions visitors wish to see.
- ... Traditionally gardens carry into posterity the names of their benefactors.
- ... The preferred site for Metrogreen is located on about 200 acres of river valley and table lands adjoining Metro Zoo to the east.
It has been selected because:
 - a) It is owned or controlled by the Municipality of Metropolitan Toronto.
 - b) It is in close proximity to the Beare Road Landfill which produces large volumes of free methane gas, which can be used as fuel to heat the greenhouses and conservatories.
 - c) The site presents the most opportunities and the least constraints for the proposed project.
- ... Metrogreen would be built in phases spread over five years or more, as funding became available. The total cost of the project has been estimated at about \$36. million.
- ... When completed Metrogreen is forecast to:
 - Attract 800,000 to 1,200,000 visitors.
 - Employ in excess of 100 full time staff.
 - Create an economic impact of \$28. million annually.
 - Be a financially self supporting operation.

GARDENS

GARDENS ARE MIRRORS THAT REFLECT THE INTEGRITY OF A SOCIETY.
TO PLANT A GARDEN IS TO EMULATE THE CREATOR;
IT HONOURS THE PAST,
GIVES THANKS FOR THE PRESENT,
AND
RECOGNIZES A PROMISE OF THE FUTURE.
TO VISIT A GARDEN IS TO PAY TRIBUTE TO THE PLANT KINGDOM,
WITHOUT WHICH MANKIND WOULD PERISH.

John Charles Mason, 1982.

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ACKNOWLEDGEMENTS

The study team acknowledges the assistance of the following persons and institutions in the information gathering and reviewing processes for this report. Their assistance is highly valued in providing information, direction, and inspiration.

- City of Toronto - Jack Kimmel, Director of Parks; Bill Earle, Parks Manager.
- Borough of Etobicoke - Al Higgs, Executive Director of Parks.
- City of North York - Jim Hayward, Director of Parks.
- Borough of York - Ian Thomson, Commissioner; Walter Tkachenko, Supervisor.
- Borough of Scarborough - Mayor Gus Harris; Brian Ashton, Exec. Ass't; Bruce Fleury, Commissioner; Ron Hambly, Exec. Director; Jim Cameron, Ass't Director of Parks.
- Borough of East York - Ross Swain, Director of Parks.
- Corporation of Metropolitan Toronto - Carl Hunter, Director of Food Services; Fred Wyers, Director, Planning Dept.; Leo Schmidt, Director Labour Relations; Edith Ganong, Mgr. (Land Use), Ian McKerracher, Director, Refuse Disposal; Ken Kilgour, Engineering Studies; P.A.C. Stickley, Director, Real Estate.
- Region of Peel - Mr. Rotfuss, Chemist (methane specialist), Works Department.
- City of Mississauga, - Rick Doyle, Director of Parks
- City of Brampton - H. Vershuren - Superintendent of Parks
- Town of Pickering - E. Buntsma - Deputy Commissioner of Parks
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 Robinhood Multifoods Ltd., - Don Canning.
 Gulf Canada Ltd., - R. H. Fenner.
 Imperial Oil Ltd. - R. E. Landry.
 Inco Ltd. - Dennis H. Nagata.
 Kodak Canada Ltd., - Jon Creighton.
 Labatts Ont. Ltd. - Jim Barlow.
 Lever Bros. Ltd., - Helen Mills.
 Lever Detergents Ltd. - Mrs. M. Corcoran.
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STUDY TERMS OF REFERENCE

This report was commissioned by the Municipality of Metropolitan Toronto in June 1981. It was funded by Metropolitan Toronto, the Ministry of Culture and Recreation and The Ministry of Energy.

This report consists of two parts.

The terms of reference for this study are summarized below.

1. Liaise and co-operate with the consultants retained by the Metropolitan Toronto Works Department who are conducting a feasibility study for the recovery and utilization of methane gas at the Beare Road site, to obtain necessary background information on the feasibility of using landfill methane as an energy source for a greenhouse/conservatory facility.
2. Conduct a market research analysis respecting the financial viability of a proposed greenhouse/conservatory/botanical garden facility.
3. Carry out a planning and design study for the facility as a whole.
4. Detail the proposed mode or modes of operation for the individual components of the facility and the facility as whole.
5. Identify possible sources of grant or subsidy support to offset capital and operating costs and develop a programme necessary to obtain support funding.
6. Review and report on regulations and acts that would govern the construction of the facility, paying particular attention to the Environmental Assessment Act.

Work was initiated in June 1981 and completed January 1982. The study team included horticultural and tourism marketing specialists, horticultural scientists, landscape architects, architects and engineers, working in concert with the Parks and Property Department of Metropolitan Toronto. The project was directed by John C. Mason and managed by Owen R. Scott. The study team approached the task from two basic directions; marketing feasibility, and planning/design/engineering feasibility. These directions were constantly meshed to check and balance all alternatives until a series of design concepts were developed. The concepts were reviewed by the Metropolitan Toronto Parks and Property Department, Ministry of Culture and Recreation and the Ministry of Energy to provide a synthesis of ideas and facts which ultimately led to the Conceptual Master Plan. Many factors, including methane gas distribution feasibility, potential gas migration problems, natural resource features, sensitive environments, transit potential,

architectural forms, garden types, and greenhouse production systems were studied, to form the eventual marketing and design concept found in this report.

Part 1 of the study represents an introduction to and summary of the project.

Part 2 provides an in-depth study of Market Analysis and Economic Feasibility, presents the Planning/Design Criteria and Process and the Conceptual Master Plan documentation, and consists of appendices of supporting references for the study.

The study team utilized the name **METROGREEN** to embody the integrated concept of a production greenhouse, conservatory, botanical garden complex.

For complete terms of reference, see Appendix 9.

EXECUTIVE SUMMARY

The purpose of this study is to determine the market and planning feasibility of a conservatory/greenhouse/botanical garden facility for Metropolitan Toronto.

To start, it was necessary to visualize a concept that would embody the requirements of the terms of reference. These were essentially: a major horticultural conservatory, a production greenhouse range, a botanical garden, the possibility of utilizing methane gas from a landfill site as fuel, and the planning, market, financial, environmental, and other implications of all of these.

The concept that is proposed combines all of the above components. It offers great scope for expression in design, attractive operating efficiencies, and a uniqueness that promises to make the facility a world leader. We call it the METROGREEN concept. The agreed upon objectives for the project were:

1. There should be a major emphasis on public enjoyment. The gardens and conservatory should qualify as a world class pleasure garden.
2. Support production facilities for the gardens and conservatory should be available in close proximity to the conservatory.
3. An educational aspect must be part of the gardens/conservatory. Recommendations for this aspect include: a school for greenhouse growers, liaison with educational institutions, educational programmes for the public, and liaison with government agencies.
4. A research component must be an integral part of the educational programmes and the on-going collections and maintenance programmes.

To select a site for the MetroGreen concept, the fundamental criteria were: that the site must be within Metropolitan Toronto, owned or controlled by the Metropolitan Corporation, and, if possible, have a ready source of low cost fuel available.

Nine sites were examined; these were reduced to four for secondary consideration. In addition, twenty landfill sites which may have provided landfill gases for fuel were considered. The Metropolitan Toronto Zoo and Exhibition Place sites were also given consideration. The preferred site is the Beare Road site which is located between the Zoo overflow parking lot on the east side of Meadowvale Road and the Beare Road sanitary landfill site. (see Map 1)

The preferred site has easy access and close proximity to the 401 expressway and arterial roads. It is compatible with surrounding land uses, zoning by-laws, and current on-site land uses. Methane gas is within 50 metres and other services within 600 metres. The size, shape, and condition of the site to absorb development is good. There is potential for future expansion. If built on this site, this project will re-inforce an existing major civic facility (the Zoo) and other recreational facilities of the Little Rouge

River Valley, as well as those planned for the Beare Road sanitary landfill site. Calculations based upon a 1981 study by Connestoga-Rovers state that the adjoining landfill site will produce sufficient quantity of methane gas to heat the proposed complex for at least twenty years from 1981. The capital costs of MetroGreen are estimated to be \$36 million (1981 dollars). The major components are expected to cost:

Production greenhouses and equipment \$4.2 million

Conservatory and public facilities \$11.8 million

Gardens and landscaping \$6.4 million

Site development \$3.3 million

plus professional fees, plant collecting, administration, and contingencies.

The first phase of construction will see methane collecting systems installed and the first 8,200 m² of production greenhouses operating within 19 months. Phase 2 (month 36) will complete the conservatory and the first of the gardens and plant collections. It will be opened to the public during this time. Phase 3 (beyond 36 months) will be the on-going building of the gardens and expansion of the production greenhouses to 16,000 m², when required.

Operating costs are expected to be \$3.7 million in the first year, rising to about \$4.9 million in year seven (1981 dollars). Over half the operating expenses will be salaries and benefits for approximately 94 staff. About 15% of the operating expenses will be used for the aquisition of plant collections and exhibits.

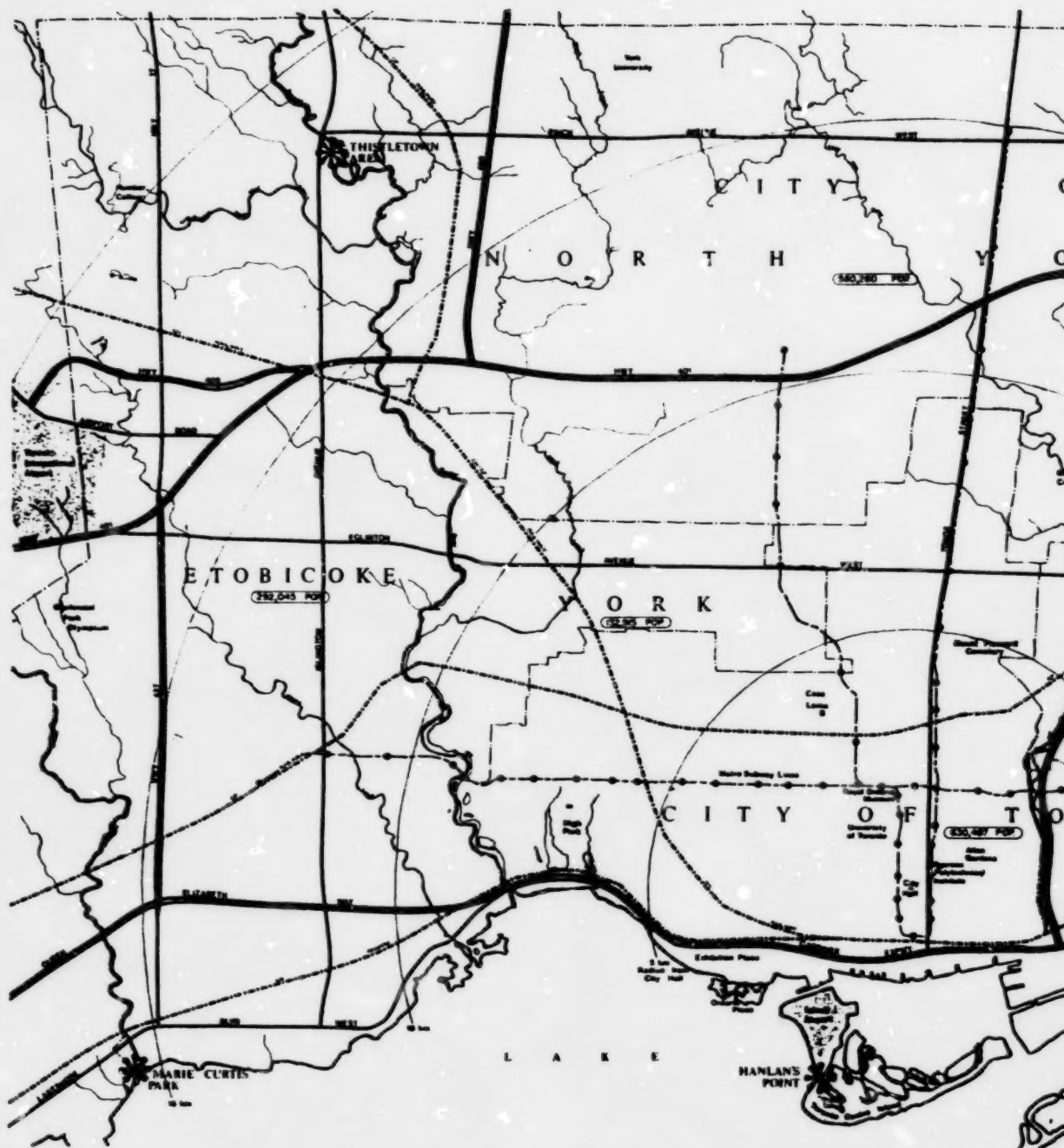
By using methane gas from the adjacent landfill site, fuel costs will be about \$250,000 (1981 dollars) less per annum than the cost of conventional fuel (natural gas).

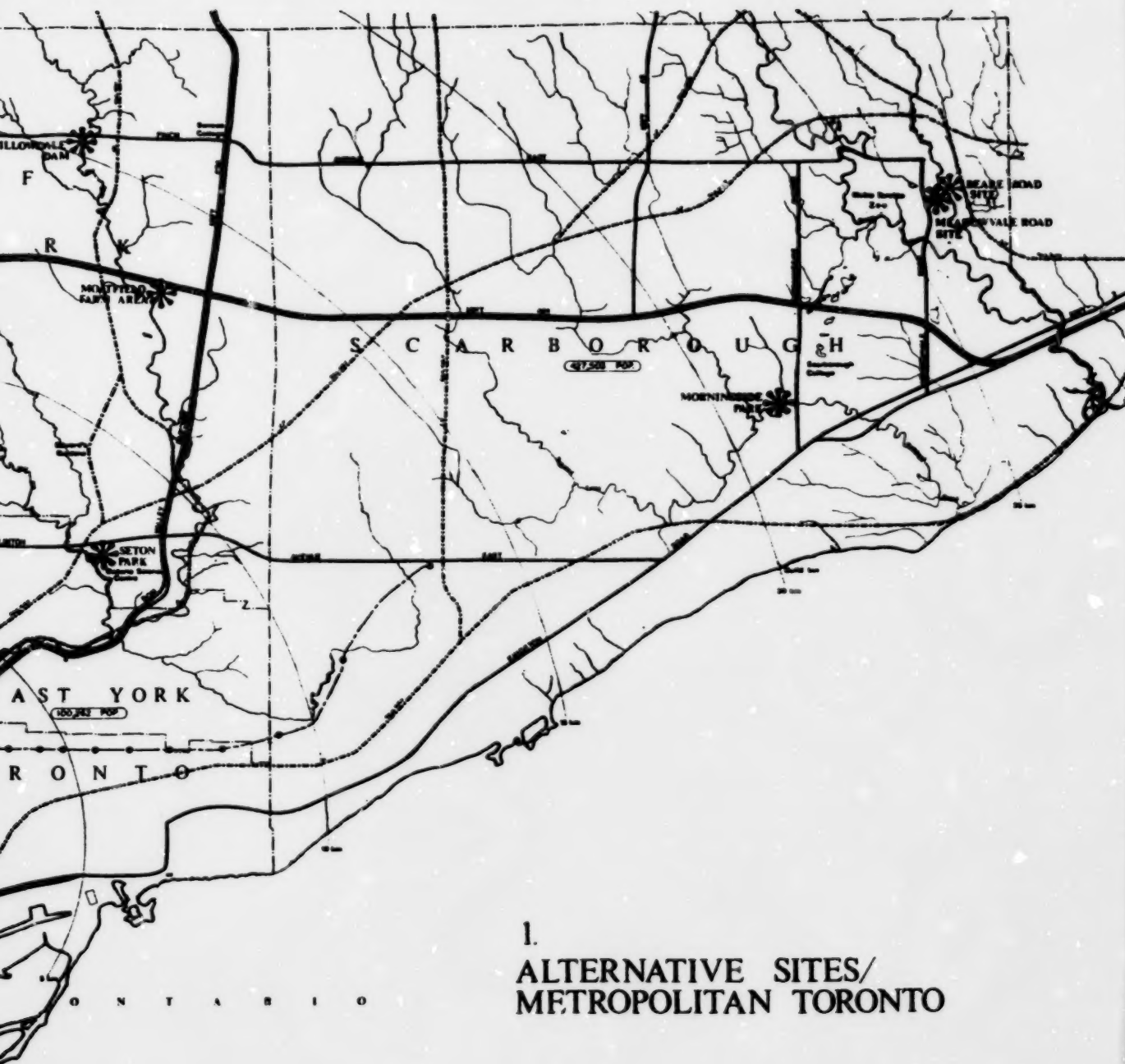
The production greenhouses will produce plants and flowers for the conservatory, botanical gardens, Metropolitan parks and avenues, and possibly other clients. The value of these, based on the cost of production, will be in excess of \$600,000 (1981 dollars) annually, which if purchased on the open market, could be expected to cost at least double that amount.

When completed, MetroGreen will be a major visitor attraction, compatable with other attractions in Metropolitan Toronto. In the first year of operation, some 800,000 visitors are forecast. These are expected to come from the resident market (60%), and the tourist market (27%). Special interest groups and others will make up the balance. By year seven the attendance is expected to reach 1.2 million, with the tourist segement growing to about 44%.

Some visitors are expected to prolong their stay in the Metropolitan area because of MetroGreen. The resulting economic impact of this has been calculated at \$12 million (1981 dollars) the first year, and growing to \$28 million (1981 dollars) by year seven. In the same period, an additional \$3 to \$5 million direct economic impact will develop from wages, purchases, etc.

Ampt +





1.
ALTERNATIVE SITES/
METROPOLITAN TORONTO

Revenues will be derived from admission fees, sale of merchandise, food and plants, parking charges, permits, and educational programmes. Revenues will range from \$3.7 million in the first year to \$5.7 million in year seven (1981 dollars). Calculations have been based on a \$2.00 average admission charge.

As a public attraction, MetroGreen will entertain, educate, involve, and inspire the visitor. It will produce plants and flowers to enhance Metropolitan parks and avenues. It promises to be a major attraction with a uniqueness that will add another dimension to the tourist magnetism of Metropolitan Toronto.

For the specific geographic area, MetroGreen, combined with the Metropolitan Toronto Zoo and the recreational facilities in the Little Rouge River Valley will create the phenomenon of attracting more visitors to the area than they would each independently. We predict that this project will have a positive effect on the Zoo attendance.

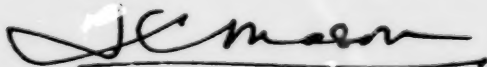
We recommend that the Municipality of Metropolitan Toronto proceed with the building of a greenhouse/conservatory/botanical garden based on the MetroGreen concept. It should be built on the Beare Road site as soon as possible to take the fullest advantage of the limited lifespan of the methane gas production. We recommend that MetroGreen be operated as a part of the Metropolitan Toronto Parks and Property Department.

Further we recommend that a project director be engaged to pilot the project through the Environmental Assessment, the fund raising, various necessary negotiations, and stages of development.

Finally, we recommend that some field testing be conducted to verify the calculated quality and quantity of methane gas from the Beare Road landfill site.

Further recommendations may be found in the study review which follows. We trust that the detailed report, which is Part 2, will answer any additional queries in the mind of the reader.

Respectfully submitted,



John C. Mason,
for
The Mason Consortium
March 1982



STUDY REVIEW

INTRODUCTION

Part of the montage that forms any city of note is its public gardens. This is particularly so in a city that prides itself on its attractiveness to tourists. Within Metropolitan Toronto are several fairweather park gardens¹ and two all weather conservatory gardens.² There is no major horticultural attraction comparable to London's Kew Gardens, Edmonton's Muttart Conservatory, Milwaukee's Mitchell Domes, nor Montreal's le jardin botanique.

Horticulturally, the Metropolitan area is in a situation not unlike that of the zoo, prior to the opening of the Metro Toronto Zoo. Co-incidental with the need for an expanded horticultural facility is the growing need for a production greenhouse for the Metropolitan Toronto Parks and Property Department.

The challenge of combining an indoor/outdoor garden with a production greenhouse presented an opportunity for which the study team could find no precedent. The possibility of using 'free' methane gas from a landfill site as fuel added a dimension which could thrust this project into world prominence.

The components with their related structural, operational, and market implications were examined. The consensus of the various disciplines of the study team was that a concept that combined the components offered the most opportunities. By combining the conservatory, greenhouses, and botanical garden into one complex an added attraction will be provided for visitors, thus increasing their length of stay. It will promote better use of staff, equipment, facilities, and fuel. Administration will be simplified. The cost of operations will be less. Full advantage can be taken of the 'free' energy. It will be a more marketable attraction. Above all, by combining the production greenhouses, indoor/outdoor gardens, an educational facility, an interpretive centre, and innovative waste energy components, Metropolitan Toronto will have a major horticultural attraction unlike any in the world.

This is the METROGREEN concept.

CONCEPT

Because of the combining of all of the components of the MetroGreen concept, Metrogreen is envisaged as a substantially larger and more complex facility than either Milwaukee's Mitchell Domes, St. Louis' Gardens and Climatron, Edmonton's Muttart Conservatory or Montreal's le jardin botanique. It will combine, from the outset, an innovative "Science Centre" concept type of exhibit hall, themed exhibits and educational/training components, with botanical gardens and production greenhouses on a single site. Its development plans call for the creation of a facility that will be complementary to existing attractions in Metropolitan Toronto, and may be expected to contribute to the average length of stay of Metro's visitors. It will be of major benefit to those businesses providing accommodation, food and beverage services, and retail services of various kinds.

A special feature of the complex will be a hall of horticultural exhibits using the latest in electronic and audio/visual techniques. They will be designed to effectively reach and involve today's electronically conditioned viewer, unlike the static, non-involving displays of yesteryear's "reading and writing" communicators. This will be an interpretive centre with plant and flower themes, a Hall of Wonders fashioned after the successful approach of the Ontario Science Centre. The exhibit themes might include: plant cloning, the role of plants in space travel, the chain of life that demonstrates human dependency on plants, carnivorous and poisonous plants, an explanation of propagating techniques, the plant pharmacy, growing oil in the backyard, how vegetables are mined! and many more.

This novel approach to teaching Botany and Horticulture will, we believe, make a unique contribution to the visitors' experience. It will be particularly significant during the months that the outside gardens are closed. It will be a "first" for a public garden.

Exhibits and interest centres that will involve and amuse the visitors will be used throughout the complex. Included will be a visit to the production greenhouses, where, from a visitors' gallery, a clear view of the operation will be seen and explained. In other parts of the gardens might be a chapel, a theatre, a band shell, information kiosks, tea house, a wine garden, etc.

In the visitor reception area, television monitors, similar to those used in airports, will announce daily features, special events and tour information. For those wishing to dine, a restaurant on an elevated level, protruding into the pods of the conservatory overlooking the exotic displays, would offer an unforgettable dining experience. In the evening the flowers would be highlighted with lighting. Programmes to entertain, inform, involve and educate the public will be an integral part of Metrogreen. The complex will include shops for plants, gifts,

books and snacks.

A visit to MetroGreen will be a fulfilling experience. It will be an added attraction to help keep Metropolitan Toronto as one of the leading tourist destinations in North America.

The economic impact will be direct and indirect as a result of extending the length of the visitors' stay. It is expected to exceed \$28 million (1981 dollars) by its seventh year of operation.

MetroGreen will be one of Metropolitan Toronto's showplaces, a desirable high quality attraction of "world class" standard. It will provide an horticultural experience not found elsewhere, at a reasonable price. Citizens will be encouraged to participate in the many opportunities the complex will offer.

Perhaps the crowning feature of the whole concept is the use of waste methane gas from a landfill site, to produce plants and flowers.

It will thrust Metropolitan Toronto into world leadership as a model of "how to use waste energy for the public benefit".

SYNOPSIS OF MARKET FEASIBILITY ANALYSIS

A major conservatory/botanical gardens project of the type envisaged in this report may be expected to develop into one of Metropolitan Toronto's major visitor attractions. It is projected to draw between 800,000 and 1.2 million visitors per year during the forecast period, and will have a major positive impact on the economy. It will add a new opportunity for public enjoyment. It will advance Metropolitan Toronto's image as a centre of culture. It will provide information, education, and product for the benefit of residents and it will use energy that would otherwise be wasted.

Based on analysis of the development concept for the attraction, MetroGreen's operating expenses are projected to be covered in full by visitor expenditures at the complex and the value of the plant materials produced by the production greenhouses.

Table of projected income follows.

Projected Net Income before Capital Costs, Metrogreen 1986 - 1992 (1981 \$)

	1986	1988	1990	1992
Gross Revenues	\$4,801,750	5,314,500	6,509,900	7,284,050
Cost of Goods Sold	1,061,625	1,155,500	1,326,875	1,520,750
Operating Revenue	\$3,740,125	4,159,000	5,183,025	5,763,300
Operating Expenses	3,700,000	3,921,200	4,644,300	4,899,650
Net Income before Capital Costs	40,125	237,800	538,725	863,650
Value of Greenhouse Output	611,700	611,700	1,119,950	1,119,950
Value of "Free Methane"	200,000	200,000	300,000	300,000

Figures have been adjusted to include two non-cash items. Operating revenues have been increased by value of output of production greenhouses. Operating expenses have been reduced by value of 'free' methane gas.

Of the four market segments that will be important sources of visitors to MetroGreen, the resident market will dominate during the early years. As the project matures and refines its marketing strategy, the tourist market will gain in importance. This market segment will be the most important source of visitors during the 1990's.

Summary of Attendance Projections, Metrogreen 1986-1992

	1986	1988	1990	1992
Resident Market				
1. Local (low-range)	367,000	377,200	387,700	398,400
2. Regional (low-range)	117,400	119,200	121,100	123,000
Tourist Market	218,300	278,500	394,700	524,400
Group Market	95,800	98,700	105,100	115,400
Program Market	10,000	10,000	12,100	14,600
Total Attendance	808,500	883,600	1,020,700	1,175,800

All market segments will supply visitors to MetroGreen during all times of the year. The resident market will dominate all seasons except the summer period. By the end of the forecast period, the number of tourists at Metrogreen may be expected to outnumber all other visitors combined during the summer months.

The most significant component of the group market will be school groups. The significance of schoolgroups is expected to decline gradually in response to declining enrolment, from 60,000 in year one to 45,000 in year seven. By the end of the forecast period, tour groups are expected to be the most important component of the group market.

The average length of stay at MetroGreen is estimated at 2.5 hours. The complex will be one of Metropolitan Toronto's true four-season attractions. The peak visitation months are expected to be July and August (due to the large tourist market in the Metropolitan Toronto Area), followed by the April to June period, and the month of December.

Peak visitation days are expected to be Sundays in August, the Christmas Holidays, and Mother's Day. Recommended design days for the project are Saturdays/holidays during August of 1992. Maximum on-grounds crowds during the recommended design days are estimated at 3,700.

The main sources of revenue for the project will be admission fees, profits on the sale of merchandise, and the value of the output of the production greenhouses. See summary of revenue projections following.

The recommended admission price structure for MetroGreen provides for an adult ticket price of approximately \$2.30 (1981 dollars) and a children (over 12)/student/senior citizen ticket price of \$1.25. These ticket prices compare favourably to those of comparable attractions on the continent, and to those of other attractions in the Metropolitan Toronto area.

Initial analysis of the operating requirements of the proposed development concept indicates that MetroGreen will provide 74 full-time jobs during its first year of operation. By year seven, total employment is projected to increase to 97. The annual payroll, including benefits, is expected to increase from approximately \$2.1 million in year one to \$2.6 million in year seven (in 1981 dollars).

Metrogreen will be highly supportive of further development of Metropolitan Toronto's important tourism industry. The economic impact of the project, based on our conservative interpretation of the available data and not including the complex' own job creation, is estimated to amount to more than \$12 million during year one. By year seven, this impact will be in the area of \$28 million per year. See table following.

Summary of Direct and Indirect Economic Impact - MetroGreen*

	Tourist Market	Group Tour Mar- ket (Tourists)	Day Visitor Market	Total
1986	\$10,118,200	\$ 1,121,700	\$ 998,300	\$ 12,238,200
1987	11,513,350	1,311,700	1,010,650	13,835,700
1988	12,908,500	1,501,750	1,023,000	15,433,250
1989	15,601,400	1,756,650	1,035,950	18,394,000
1990	18,294,350	2,011,600	1,048,750	21,354,700
1991	21,300,150	2,349,950	1,061,700	24,711,800
1992	24,305,950	2,688,300	1,074,700	28,068,950

* Based on our low visitor attendance projection

Summary of Revenue Projections - MetroGreen 1986 - 1992 (1981 \$)

	1986	1988	1990	1992
Admission Fees	\$ 1,617,000	1,767,300	2,041,400	2,351,600
Merchandise (50% of gross)	1,010,625	1,104,500	1,275,875	1,469,750
Food/Bev. (rentals)	175,000	200,000	225,000	250,000
Parking (\$1 per day)	266,800	291,600	336,800	388,000
Permits	50,000	50,000	50,000	50,000
Sponsorships		50,000	50,000	50,000
Training/Education (15% of gross)	9,000	9,000	9,000	9,000
Memberships		75,000	75,000	75,000
Production Greenhouses (Value of Output*)	611,700	611,700	1,119,950	1,119,950
Totals	\$ 3,740,125	4,159,100	5,183,025	5,763,300

*Non-cash book transfer item

A VISIT TO METROGREEN

When the visitors come to MetroGreen they will be greeted by a garden setting, reflecting pools and a group of glass pods that will be the conservatory. The entrance from the 600 car parking lot will be planted with tropical Palms and other exotic plants that will in effect be a preview of what they are about to see. Upon being received in the visitor reception centre, television monitors will advise what special features are to be seen that day and what unusual collections or flowers the visitor should look for. They can now make a choice whether to pay to see the indoor displays or to pass through into the "free" outdoor gardens.

For those choosing to visit the indoor show, they may take a complete tour through all the adjoining pods, seeing all the displays of flowers and plants. These would include the exhibit house, and the individually climate controlled houses containing Orchids, exotic tropicals, economic plants, desert Cacti and rare forest collections. Following these they would proceed into the "Hall of Wonders" and the visitors gallery of the production greenhouses. For those with special interests direct access into any collection can be made without passing through all the house. This allows visitors to choose what they wish to see. Those visitors wishing to see the outside gardens can conveniently take all or part of the gardens depending on the time they wish to spend at Metrogreen. This is done by designing the paths in a series of expanding loops, with the smallest taking about 20 minutes to walk and the longest, which would circle down into the valley, being about a 3 hour walk. Each circle walk begins and ends at the conservatory. Every walk will have its own points of interest in different gardens, and different nodes. One will feature a waterfall, while another might include a quiet glade with wildflowers. The natural plants and landscaping will be featured and may be viewed from walkways for their protection. Walkways and paths will be designed to accommodate wheelchairs, the elderly, and the disabled.

Plant collections and key plants will be identified with technical information and the romance of the plant.

MetroGreen's purpose will be to please the visitors and impress upon them the important role that plants play in human life.

PRODUCTION GREENHOUSES

As indicated before, MetroGreen will accommodate two major components, a conservatory/botanical garden component and a production greenhouse component.

The Market Feasibility Analysis has dealt primarily with the visitor aspects of the complex and its parts. While the bulk of the economic considerations evolve around the visitor, the role of the production greenhouses is very important.

The public gardens, flower displays and exhibits in the conservatory will consist of plants at their visual best. These plants generally will be grown in a greenhouse. For showtime they will be transferred into place in the conservatory or garden. When the show is over, they will be replaced by plants for the next floral exhibition. This is expected to be repeated at least six times a year in the exhibition house and probably on an 'on-going' basis in the tropical, desert, alpine, Orchid, rainforest and economic plants houses. Hence, the need for a backup production greenhouse.

Experience at similar public gardens throughout the continent indicate that the area of backup greenhouses is from one to two times the area of the exhibition space. Obviously the closer the growing area is to the exhibition hall, the more efficient the operation should become.

Co-incidental with the foregoing is a desire for a greenhouse facility to produce plants and flowers for the Metropolitan Toronto Parks and Property Department.

With the possibility of having "free" methane for fuel, which represents about 20% of greenhouse operating costs, it seemed reasonable to examine the implications of combining the municipal greenhouses with the conservatory backup houses.

Beside the benefits of using methane with an annual saving of some \$200,000 (1981 dollars), several other opportunities were recognized; not the least of which was the better use of staff, equipment and the facilities.

The highly skilled growers needed to grow plants for the conservatory and botanical gardens will be invaluable in the production of plants for the municipality. The container growing system, once proven by the parks staff, might be adapted for use in other gardens. Locating the greenhouses close to the conservatory and botanical gardens has the effect of placing the producer next to the major consumer, a very efficient arrangement. Probably just as important, in an indirect way, is the opportunity to show city dwellers how plants grow in a greenhouse. This will inform, amuse and interest the visitor. It will be an educational tool. It will prolong the visit, with contingent economic spin-offs. For many visitors it might well be the highlight of their visit.

The first phase of the building of MetroGreen will include 8,200m² (2 acres) of production greenhouses at an estimated cost of \$1.4 million (1981 dollars). These should satisfy the immediate needs of Metropolitan parks and avenues and will give about two years advance growing and storage space for the plant collections required by the conservatory/botanical gardens. The greenhouses will be of a labour/energy efficient design and be equipped with the most modern electronic controls.

By the end of our forecast period (1992) the greenhouses are planned to expand to 16,000m².

BOTANICAL GARDEN AND CONSERVATORY

While not losing sight of the traditional purpose of botanical gardens, which is education and research, MetroGreen is seen primarily as a public pleasure garden. The gardens and plant collections will be chosen for their attractiveness to the visitor. The indoor and outdoor gardens will compliment each other. The outdoor gardens will exhibit plant materials tolerant of our climate, while the indoor areas with their controlled environments will exhibit the exotic plants from anywhere in the world. The complex is planned to accomodate a design day attendance of 7,400, peaking to 9,200 on special days. The on-ground crowd at any one time is expected to be 50% of the day's attendance.

The estimated costs of the outdoor garden component is \$6.4 million (1981 dollars). The conservatory, with six plant display areas, an interpretive centre (Hall of Wonders), restaurants, plant and gift shops, and other visitor amenities is estimated to cost \$11.8 million (1981 dollars). The estimated cost of site services, which includes roads, parking lots, service areas, storage warehouse, sewage, water, electrical supply, and methane retrieval systems is \$3.3 million (1981 dollars). Mechanical equipment to service greenhouses and conservatory are estimated to cost \$1.6 million (1981 dollars). Landscape architectural, architectural, engineering, and project administration fees are estimated at \$4.7 million (1981 dollars). Contingency estimates of 20% are \$5.2 million (1981 dollars).

INTREPRETIVE CENTRE

At MetroGreen we visualize an interpretive centre or "Hall of Wonders" in which a variety of displays that will involve the visitor would project the message in an entertaining and effective, educational manner. The themes of significant visitor interest are virtually unlimited. We see the "Hall of Wonders" making a unique contribution to the visitors' experience at MetroGreen.

BUILDING PROGRAMME AND SITE SELECTION

From a review of the other gardens examined during the course of this study and the market feasibility analysis, the following objectives were recommended as a basis for the MetroGreen complex:

1. There should be a major emphasis on public enjoyment. The gardens and conservatory should qualify as a world class pleasure garden.
2. Support production facilities for the gardens and conservatory should be available in close proximity to the conservatory.
3. An educational aspect must be part of the gardens/conservatory.

Recommendations for this aspect include: a school for greenhouse growers, liaison with universities, educational programmes for the public, and liaison with government.

4. A research component must be an integral part of the educational programmes. An herbarium and library are the minimum facilities.

A consideration of the spatial needs of the various components and programmes determined the area requirements to be 25 - 32 hectares (62 - 79 acres). Landfill sites and park sites were examined against site and locational criteria. The Beare Road site is the most appropriate on which to build the MetroGreen complex.

SOME SPECIAL FEATURES OF METROGREEN

METHANE (Chapter 8, Part 2)

The possibility of using methane gas from a landfill site to heat a major greenhouse/conservatory is in itself a breakthrough. The capital costs to install 'collectors' is estimated at \$750,000*. The savings in fuel costs are estimated to be \$200,000 to \$250,000* yearly. The minimum life expectancy of methane production, in volume sufficient to heat this complex is 20 years from 1981.

Using 'free' methane not only makes economic sense, but should be well received by the taxpayers. It would make Metropolitan Toronto the first major municipality in the world with such a system.

*(1981 Dollars)

CONTAINERS - INSTANT GARDENS (Chapters 3 & 7, Part 2)

The enhancement of Metropolitan Toronto parks and avenues is a distinct possibility, with the introduction of a container growing system for flowers proposed by this study. This would be another innovation of Metrogreen that would be a first for a major municipality.

SCHOOL FOR GREENHOUSE GROWERS (Chapter 7, Part 2)

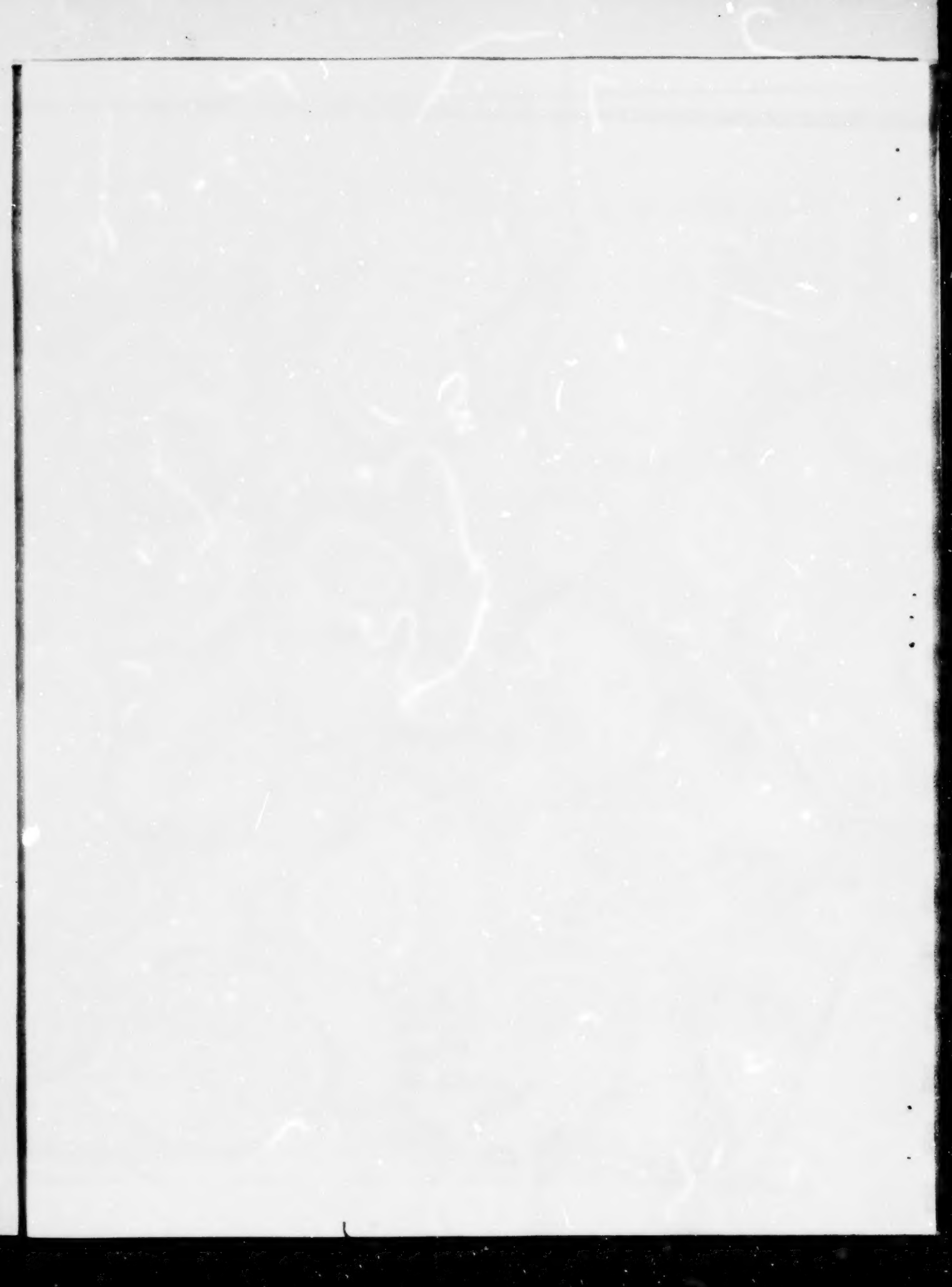
In affiliation with the Ontario Ministry of Agriculture and Food and a university, the study team proposes a school for training greenhouse growers. The facilities and surroundings of Metrogreen are conducive to a learning environment. Both Metrogreen and the industry will need trained growers. Initially classes of 8 to 10 students in a two year diploma program is suggested. A possible site for the growers school is the Valley Halla property located in the Little Rouge River Valley.

HALL OF WONDERS (Interpretive Centre) (Chapter 7, Part 2)

The magic, mystery and riddles of plant life will be demonstrated and explained by unusual exhibits. The techniques, not unlike

those of the Ontario Science Centre, will involve and inform the visitor. Important topics of Botany and Horticulture will be displayed in a fun and fascinating manner. These exhibits will help extend the stay of the visitor and will add significantly to Metrogreen's ability to offer a memorable horticultural experience.

A Conceptual Master Plan of the METROGREEN concept follows.



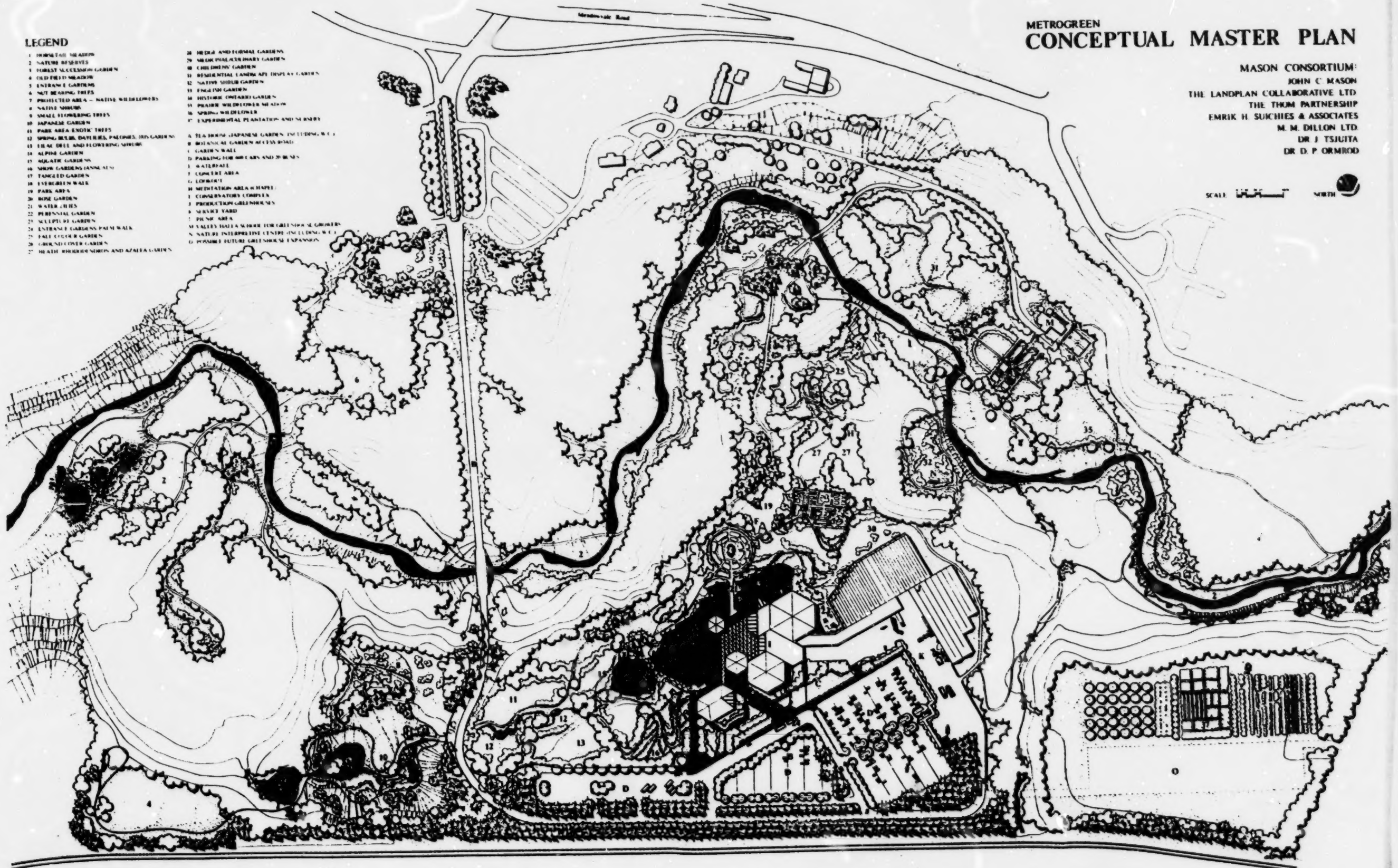
LEGEND

- 1 SWINE TAIL MEADOW
- 2 NATIVE HERBIVORE
- 3 FOREST SUCCESSION GARDEN
- 4 OLD FIELD MEADOW
- 5 ENTRANCE GARDENS
- 6 NATIVE HERBIVORE
- 7 PROTECTED AREA - NATIVE WILDLIFE
- 8 NATIVE HERBIVORE
- 9 SMALL FLOWERING TREES
- 10 JAPANESE GARDEN
- 11 PARK AREA - EXISTING TREES
- 12 SPRING BUSH, DAYLILIES, PALM TREES, IRIS GARDEN
- 13 TEA DRINK AND FLOWERING MEADOW
- 14 ALPINE GARDEN
- 15 AQUATIC GARDEN
- 16 SNOW GARDEN (JAPANESE)
- 17 TANGLED GARDEN
- 18 EVERGREEN WALK
- 19 PARK AREA
- 20 ROSE GARDEN
- 21 WATER LILIES
- 22 PERENNIAL GARDEN
- 23 SCULPTURE GARDEN
- 24 ENTRANCE GARDENS - PALM WALK
- 25 FALL COLOR GARDEN
- 26 GROUND COVER GARDEN
- 27 BATH HOUSE GARDEN AND AZALEA GARDEN
- 28 MIDDLE AND FORMAL GARDENS
- 29 MIDDLE PALACE GARDEN
- 30 CHILDREN'S GARDEN
- 31 RESIDENTIAL LANDSCAPE DISPLAY GARDEN
- 32 NATIVE SHrub GARDEN
- 33 FLOWERING GARDEN
- 34 HISTORIC CHINESE GARDEN
- 35 PRAYER WILDLIFE MEADOW
- 36 SPRING WILDLIFE
- 37 EXPERIMENTAL PLANTATION AND NURSERY
- 38 TEA DRINK - JAPANESE GARDEN - EXISTING WALK
- 39 BOTANICAL GARDEN ACCESS ROAD
- 40 GARDEN WALL
- 41 PARKING FOR MOTOR CARS AND BUSES
- 42 WATERFALL
- 43 CONCRETE AREA
- 44 COURTYARD
- 45 MEDITATION AREA - SHAPE
- 46 CONSERVATORY COMPLEX
- 47 PRODUCTION GREENHOUSE
- 48 SERVICE YARD
- 49 PINE AREA
- 50 VALLEY HALL - MIDDLE FOR GREENHOUSE GROWERS
- 51 NATIVE INTERPRETIVE CENTRE (INCLUDING WALK)
- 52 POSSIBLE FUTURE GREENHOUSE EXPANSION

METROGREEN CONCEPTUAL MASTER PLAN

MASON CONSORTIUM:
JOHN C. MASON
THE LANDPLAN COLLABORATIVE LTD.
THE THOM PARTNERSHIP
EMRIK H. SUICHIES & ASSOCIATES
M. M. DILLON LTD.
DR. J. TSUJITA
DR. D. P. ORMROD

SCALE 1" = 100' NORTH



RECOMMENDATIONS

Based on the findings of this study, it is recommended that:

1. The Corporation of the Municipality of Metropolitan Toronto should proceed at once with the building of a greenhouse, conservatory, botanical garden facility within Metropolitan Toronto. The project is economically feasible and is a viable facility to build and operate. The capital cost estimates are \$36 million (1981 dollars).
2. The facility should be a single complex, comprised of a production greenhouse facility, a public conservatory for horticultural displays and exhibits, and a botanical garden which is primarily a public pleasure garden.
3. The complex should be built on the Beare Road site, which is approximately 80 hectares (200 acres) of meadow, woodland, and river valley, and is situated between the Metropolitan Toronto Zoo and the Beare Road sanitary landfill site.
4. Waste energy (methane gas) should be used to heat and cool the complex. The Connestoga-Rovers' final report on methane gas at the Beare Road landfill site, January, 1982, states "although not proven, it is estimated that gas extraction would be available for up to 20 years". To take fullest advantage of this 'free' energy, it is important that the project commence as soon as possible. However, before proceeding we suggest that some field testing be done to confirm the quality and quantity of gas.
5. The project should be built in three phases, namely:
 - a. planning, preliminary design, and fund raising
 - b. detailed design and construction
 - c. completed gardens and production greenhouses
6. A development committee, as a sub-committee of the Metropolitan Toronto Parks, Recreation and Property Committee should be appointed. We recommend that the chairman of this committee be the Commissioner of Parks and Property. This committee should include a representative of the major funding agencies who may have an interest and ability to help direct the project. This committee will eventually become the policy committee for the complex.
7. A project director (manager) should be appointed to pilot the project through the various stages of development, such as, environmental assessment, fund raising, negotiations with various agencies, and liaison with appropriate bodies. The project director will also be responsible for: seeking and recommending key personnel as needed and directing implementation of the marketing plan. The project director

would be responsible to the development committee and report directly to the chairman. The Parks and Property Department should administer MetroGreen.

8. Marketing activities, such as, public relations for fund raising, organizing a speakers' bureau, and encouraging a positive public attitude towards the project should be started early in the development. A strong public relations campaign leading up to the opening will be invaluable in launching the various MetroGreen programmes.

Included would be a membership body (i.e. Friends of MetroGreen) that may be entitled to certain member privileges. Membership fees would be expected to cover costs of membership services. Success at MetroGreen will depend largely on a vigorous and effective marketing activity.

9. As fund raising in the private sector has become very competitive, a most sophisticated approach must be taken. A fund raising consultant should be engaged.
10. Plant societies and interested plant collectors from private and public agencies should be alerted at an early stage to begin the plant collections for MetroGreen.
11. Legislation requires that a municipal project costing \$2 million or more is subject to an Environmental Assessment. We recommend that this study be submitted to the Ministry of Environment as a presubmission document for their guidance and further direction toward satisfying the requirements.
12. A school for training greenhouse growers should be organized as an affiliate programme in conjunction with the Ontario Ministry of Agriculture and Food and a university. We suggest a diploma level course. Valley Halla is recommended as the site for the school.
13. To resolve a problem caused by winter salt splash on University Avenue, a system of 'instant gardening in containers' is suggested. This idea is innovative and untested, therefore, we suggest a trial be made to prove the system before greenhouse space and equipment is committed.
14. An effort should be made to determine the financial support of the provincial and federal governments as soon as possible, before launching an appeal for private support.
15. The Conceptual Master Plan should be used to help gain public support, raise funds, and as a guide for future detailed planning and design.
16. Consideration should be given to the development of a "Metro Culture Card" which would provide a discounted one-price admission to a number of visitor attractions within

Metropolitan Toronto, including MetroGreen and the Zoo.

FOOTNOTES:

1. Edwards Gardens, James Gardens, High Park, Queens Park, Exhibition, etc.
2. Allan Gardens and Centennial Greenhouses.